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Pull-out guide fittings for drawers

The invention relates to pull-out guide fittings for drawers or the like with a drawer-side drawer track, a body-side support track and a center track running between these two tracks on both sides of the drawer, wherein the weight of the drawer between the tracks is transferred via rollers or the like.

The invention addresses the problem of improving pull-out guide fittings of the above described type to the extent that when sliding in or fully pulling out the drawer, jarring is avoided or largely reduced.

The problem according to the invention is solved thereby that between at least two of the tracks a damping device is effective, which comprises at least two parts movable relative to one another.

The damping device according to the invention can become effective when the drawer is being slid in, which means when the drawer is completely slid into the body of the furniture item, as well as also when pulling out the drawer, when the drawer reaches its maximum pull-out position.

As the damping device is preferably used a hydraulic damping device. This can be formed by a cylinder with a piston linearly displaceable therein as well as also by a rotary damper.

In the following, various embodiment examples of the invention will be described in conjunction with the Figures of the attached drawings.
Therein depict:

Fig. 1 a schematic front view of pull-out guide fittings according to the invention,

Fig. 2 a view from below of the pull-out guide fittings with the drawer open,

Fig. 3 a view from below of the pull-out guide fittings with the drawer closed,

Fig. 4 a front view of a further embodiment example of the pull-out guide fittings according to the invention,

Fig. 5 a view from below of this embodiment example with the drawer open,

Fig. 6 a view from below of this embodiment example with the drawer closed,

Fig. 7 a front view of a further embodiment example of pull-out guide fittings according to the invention,

Fig. 8 to 12 views from below of the pull-out guide fittings according to the invention, wherein the drawer is shown in the maximum pull-out position of the closed position and in three intermediate positions,

Fig. 13 a front view of a further embodiment example of pull-out guide fittings according to the invention,

Fig. 14 to 18 views from below of the pull-out guide fittings according to the invention, wherein the drawer is shown in the maximum pull-out position of the closed position and in three intermediate positions,

Fig. 19 a front view of pull-out guide fittings with a control by force between the tracks,

Fig. 20 a view from below of these pull-out guide fittings in the maximum pulled out position,

Fig. 21 a view from below of these pull-out guide fittings in an intermediate position,

Fig. 22 a view from below of these pull-out guide fittings with the drawer closed,

Fig. 23 a schematic side view of a further embodiment example of pull-out guide fittings according to the invention in the fully pulled out position,

Fig. 24 to 27 side views of this embodiment example of pull-out guide fittings according to the invention in differing intermediate positions,

Fig. 28 a side view of this embodiment example of pull-out guide fittings according to the invention in the closed position.

The embodiment examples shown relate to an underfloor mounting of the pull-out guide fittings according to the invention. The pull-out guide fittings can, however, also be disposed next to the drawer side wall as well as also integrally in the drawer frame.

The pull-out guide fittings according to the invention comprise on each side of the drawer 1 a support track 3 fastened on a body side wall, a drawer track 5 fastened on the drawer 1 underneath the drawer bottom 4, and a center track 6 running between the tracks 3 and 5.

The load between tracks 3, 5, 6 is transferred in conventional manner via rollers

and/or sliders.

In the embodiment example according to Figures 1 to 3 a damping device 7 is supported on the drawer track 5 and the support track 3 comprises a stop 8 for the damping device 7.

When the drawer 1 is closed, a traverse 9 of the damping device 7 abuts the stop 8. The traverse 9 is provided with a toothed rack profile 10 which meshes with a pinion 11 of a rotary damper. As soon as the traverse 9 abuts the stop 8, the pinion 11, and thus the rotary damper, is rotated.

When the drawer 1 is opened, the traverse 9 is brought into its standby position by a compression spring 12.

In the embodiment example according to Figures 4 to 6, the damping device 7 is again supported on the drawer track 5. Stop 8 however, is disposed on the center track 6. The damping device 7 becomes active when the center track 6 has reached its most rearward position and traverse 9 abuts stop 8.

In the embodiment example according to Figures 7 to 12, the damping device 7 according to the invention is supported on the support track 3 and stop 8 is developed on the center track 6. As soon as stop 8 abuts traverse 9, the pinion 11 is rotated and the rotary damper of the damping device 7 becomes active.

A compression spring 12 is provided which, with the drawer 1 open, presses the traverse 9 again into standby position.

In the embodiment example according to Figures 13 to 18, the damping device 7 is supported on the center track 6. The damping device 7 is again provided with a rotary damper, wherein the pinion 11 of this rotary damper meshes with two

traverses 9.

Support track 3 as well as also drawer track 5 are provided with a stop 8.

When closing the drawer 1, both stops 8 act simultaneously onto the rotary damper of the damping device 7.

Between tracks 3, 5, 6 advantageously a control is provided, which ensures that tracks 5, 6 are moved like a differential pull-out relative to track 3 and to one another.

In this embodiment example also compression springs 12 are provided which, with the drawer 1 open, press the traverse 9 of the damping device 7 again into the standby position.

As shown in Figures 19 to 22, the control can be formed by a friction wheel 13. The friction wheel 13 is supported on the center track 6 and runs on webs of the drawer track 5 and the support track 6. A cable control could equally well be provided. The control for the flow of motion of the track can be applied in all embodiment examples.

In Figure 19 rollers 14 are shown between tracks 3, 5, 6.

The damping device 7 is developed as a cylinder with a piston linearly displaceable therein. As the damping medium can be employed a fluid, for example an oil, a gas or air.

In the embodiment example according to Figures 23 to 28, a damping device 7 and a pull-in attachment 15 are disposed at the back end of the support track 3.

On the center track 6 again a friction wheel 13 is supported, which, if appropriate, can also be provided with a toothed rim.

At its front end the center track 6 is provided with a coupling attachment 16, via which the center track 6 can be coupled with the drawer track 5.

The coupling attachment 16 comprises a lever supported so as to be tiltable on the center track 6, which lever in the coupling position snaps into a hollow 17 of the drawer track 5.

The drawer track 5 is provided at its front end with a stop 18. At the start of the closing motion, the center track 6 and the drawer track 5 run out differentially with respect to one another, since the friction wheel 13 rests on the friction face 19 and the drawer track 5 is braced on the friction wheel 13.

When the center track 6 and the drawer track 5 have reached the position shown in Figure 24, the friction wheel 13 leaves the friction face 19 and the control action of the friction wheel 13 is discontinued.

Instead, the stop 18 of the drawer track 5 abuts the front end of the center track 6 and the center track 6 is pushed further into the body by the drawer track 5.

When the center track 6 and the drawer track 5 have reached the position shown in Figure 25, the coupling device [sic: attachment] 16 abuts the front end of the support track 3 or the friction face 19, is tilted into the perpendicular position and snaps into the hollow 17 of the drawer track 5. The drawer track 5 is thereby coupled with the center track 6 and the two tracks 5, 6 are jointly moved further in the closing direction.

In the further course, the drawer track 5, as can be seen in Figure 26, abuts the ram

[sic: traverse] 9 of the damping device 7 and the push-in motion of the drawer is decelerated.

After the drawer 1 has again be moved in, coupling of the center track 6 with the pull-in attachment 5 [*sic*: 15] occurs, wherein the pull-in attachment 15 engages a coupling part 20 of the center track 6. Now the center track 6, together with the drawer track 5, is pulled into the end position shown in Figure 28, wherein this motion is damped by the damping device 7. A highly quiet running-in of the drawer into the furniture body takes place.

When pulling out the drawer 1, first the drawer track 5 remains coupled with the center track 6 and these are moved together outwardly, until the friction roller [sic: wheel] 13 runs onto the friction face 19 and the differential motion of the tracks 5, 6 results.

Instead of the drawer track 5, center track 6 can also abut the damping device 7.